

Appl. No. : 10/674,553
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AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of preventing passage of embolic material from a left atrial appendage of a patient, comprising:

providing a deployment catheter having an elongate flexible body with a proximal end and a distal end, and an implantable device removably carried by the distal end, said device comprising a barrier, said device radially expandable from a reduced diameter to an enlarged diameter and configured to conform to an inside surface of the left atrial appendage;

positioning at least a portion of the device in the left atrial appendage; and

enlarging the device within the left atrial appendage, wherein said barrier extends across the left atrial appendage when enlarged ~~and~~ so that ~~at least a portion of the device circumferentially seals against~~ ~~is in substantial sealing contact with~~ the inside surface of the left atrial appendage.

2. (Original) The method of Claim 1, wherein the device self-expands to its enlarged shape.

3. (Original) The method of Claim 1, wherein the device includes an expandable frame.

4. (Original) The method of Claim 3, wherein the device includes a mesh barrier operably connected to the expandable frame.

5. (Original) The method of Claim 1, further comprising releasing the device from the deployment catheter after the device is enlarged within the left atrial appendage.

6.-37. (Canceled)

38. (Original) A method of preventing passage of embolic material from a left atrial appendage of a patient, comprising:

positioning a barrier adjacent an opening of the left atrial appendage; and

engaging at least one anchoring element with tissue within the left atrial appendage, the at least one anchoring element being operatively connected to the barrier to hold the barrier adjacent the opening and prevent passage of embolic material from the left atrial appendage.

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39. (Original) The method of Claim 38, wherein the barrier is a mesh.
40. (Original) The method of Claim 38, wherein the barrier is porous.
41. (Original) The method of Claim 40, wherein the barrier has a pore size of up to about 0.04 inches.
42. (Original) The method of Claim 40, wherein the barrier is made of ePTFE.
43. (Original) The method of Claim 38, wherein the barrier has generally a disc shape.
44. (Original) The method of Claim 38, wherein the barrier comprises an inflatable balloon.
45. (Original) The method of Claim 38, wherein the barrier is connected to an expandable frame.
46. (Previously presented) The method of Claim 38, wherein the at least one anchoring element extends at least partially transversely toward a distal end of the left atrial appendage.
47. (Previously presented) The method of Claim 38, wherein the at least one anchoring element engages tissue at the distal end of the left atrial appendage.
48. (Previously presented) The method of Claim 38, wherein a plurality of anchoring elements engage tissue along the side walls of the left atrial appendage.
49. (Original) The method of Claim 38, further comprising delivering the barrier to the left atrial appendage with a catheter.
50. (Previously presented) The method of Claim 1, wherein the device at least partially prevents passage of embolic material from the left atrial appendage by supporting tissue growth.
- 51.-54. (Canceled)
55. (Previously presented) The method of Claim 38, wherein the device at least partially prevents passage of embolic material from the left atrial appendage by supporting tissue growth.
56. (Previously presented) A method of preventing passage of embolic material from an atrial appendage of a patient, comprising positioning a device adjacent an opening of the atrial appendage to block the opening to the atrial appendage, wherein preventing passage of embolic material from the atrial appendage occurs substantially entirely as a result of said positioning, and

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engaging at least one anchoring element with tissue within the atrial appendage to hold the device in place.

57. (Previously presented) The method of Claim 56, wherein the device is delivered percutaneously.

58. (Previously presented) The method of Claim 56, wherein the device is positioned within the atrial appendage.

59. (Previously presented) The method of Claim 56, wherein the device comprises an expandable frame.

60. (Previously presented) The method of Claim 56, wherein the device comprises a membrane sized to block the opening.

61. (Previously presented) The method of Claim 60, wherein the membrane is porous.

62. (Canceled)

63. (Previously presented) The method of Claim 56, wherein the device has generally a disc shape.

64. (Previously presented) The method of Claim 56, wherein the device at least partially blocks passage of embolic material from the atrial appendage by supporting tissue growth.

65. (Canceled)

66. (Previously presented) The method of Claim 56, comprising, prior to positioning said device:

delivering a trans-septal catheter into the right atrium;

advancing a distal tip of the trans-septal catheter through a desired portion of the septum and to the left atrial appendage, wherein the trans-septal catheter curves to direct the distal tip of the trans-septal catheter toward the left atrial appendage; and

delivering said device through the trans-septal catheter and deploying the device at the left atrial appendage, the device being configured to prevent passage of embolic material from the left atrial appendage.

67. (Previously presented) The method of Claim 66, further comprising delivering a delivery catheter through the trans-septal catheter to deliver said device.

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68. (Previously presented) The method of Claim 67, wherein a distal end of the delivery catheter is disposed within an opening of the left atrial appendage.

69. (Previously presented) The method of Claim 66, wherein the device is deployed by expanding said device.

70. (Previously presented) The method of Claim 66, further comprising applying an axial force to said device to deploy said device.

71. (Previously presented) The method of Claim 70, wherein the axial force is applied by a plunger slidably received within a delivery catheter, the delivery catheter extending through the trans-septal catheter to the left atrial appendage.

72.-84. (Canceled)

85. (Currently amended) A method of performing a procedure at an atrial appendage of a patient, comprising:

collapsing an implantable structure to a reduced configuration;

enlarging the implantable structure adjacent an opening of the atrial appendage;

and

placing at least a portion of the implantable structure in substantial circumferential sealing contact with a tissue surface adjacent the opening of the atrial appendage.

86. (Previously presented) The method of Claim 85, wherein the structure is collapsed into a catheter.

87. (Previously presented) The method of Claim 86, wherein the structure is collapsed into a catheter outside the body.

88. (Previously presented) The method of Claim 87, wherein the structure is enlarged after said collapsing.

89. (Previously presented) The method of Claim 85, wherein the structure is enlarged at least partially within the atrial appendage.

90. (Previously presented) The method of Claim 85, wherein the structure when enlarged prevents passage of embolic material from the atrial appendage.

91. (Previously presented) The method of Claim 85, wherein the implantable structure comprises a surface that induces tissue growth.

92.-119. (Canceled)

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120. (New) A method of preventing passage of embolic material from a left atrial appendage of a patient, comprising:

providing an implantable device having a proximal end, a distal end, a longitudinal axis extending from the proximal end to the distal end, and a barrier, the implantable device having a collapsed configuration and an expanded configuration;

positioning the implantable device in the left atrial appendage while the device is in its collapsed configuration; and

enlarging the implantable device in the left atrial appendage, wherein the barrier extends across the longitudinal axis when the implantable device is enlarged.

121. (New) The method of Claim 120, wherein the implantable device is at least partially self-expanding, and is restrained from expansion until positioned in the left atrial appendage.

122. (New) The method of Claim 121, wherein enlarging the implantable device in the left atrial appendage comprises releasing the implantable device from a deployment catheter.

123. (New) The method of Claim 122, wherein the implantable device is positioned in an inner lumen of the deployment catheter, and releasing the implantable device from the deployment catheter comprises axially moving the implantable device out of the inner lumen of the deployment catheter.

124. (New) The method of Claim 122, wherein releasing the implantable device from the deployment catheter comprises detaching the implantable device from a distal end of the deployment catheter.

125. (New) The method of Claim 120, wherein the implantable device comprises an expandable frame.

126. (New) The method of Claim 125, further comprising a mesh operably connected to the expandable frame.

127. (New) The method of Claim 120, wherein the device at least partially prevents passage of embolic material from the left atrial appendage by supporting tissue growth.

128. (New) A method of preventing passage of embolic material from a left atrial appendage of a patient, comprising:

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advancing a catheter having a proximal end and a distal end through the patient until the distal end is disposed adjacent the opening of the patient's left atrial appendage; and

releasing a device from the distal end of the catheter to deploy the device, the device configured to block an opening to the left atrial appendage to prevent passage of embolic material from the left atrial appendage.

129. (New) The method of Claim 128, wherein the device is positioned within an inner lumen of the catheter, and releasing the device comprises applying axial force in a distal direction to the device to deploy it.

130. (New) The method of Claim 128, wherein releasing the device from the catheter comprises detaching the device from the distal end of catheter.

131. (New) The method of Claim 128, wherein the device comprises an expandable frame.

132. (New) The method of Claim 131, further comprising a mesh operably connected to the expandable frame.

133. (New) The method of Claim 128, wherein the device at least partially prevents passage of embolic material from the left atrial appendage by supporting tissue growth.

134. (New) A method of preventing passage of embolic material from a left atrial appendage of a patient, comprising positioning a device in the left atrial appendage and securing the device relative to the left atrial appendage, the device configured to prevent passage of emboli from the left atrial appendage, wherein the device conforms to an inside wall of the left atrial appendage when positioned therein.

135. (New) The method of Claim 134, wherein the device comprises a mesh barrier.

136. (New) The method of Claim 134, wherein the device comprises an expandable frame.

137. (New) The method of Claim 134, wherein the device is delivered percutaneously into the patient.

138. (New) The method of Claim 134, wherein the device engages walls of the left atrial appendage.

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139. (New) The method of Claim 134, wherein the device at least partially prevents passage of embolic material from the left atrial appendage by supporting tissue growth.

140. (New) A method of preventing passage of embolic material from a left atrial appendage of a patient, comprising:

percutaneously delivering an implantable device to the left atrial appendage;
securing the implantable device relative to the left atrial appendage; and

preventing passage of embolic material from the left atrial appendage with the implantable device, wherein said preventing passage of embolic material comprises providing a barrier carried by the implantable device across the left atrial appendage.

141. (New) The method of Claim 140, wherein the device is delivered using a catheter.

142. (New) The method of Claim 141, wherein the device comprises an expandable frame.

143. (New) The method of Claim 142, wherein the device comprises a mesh operably connected to the expandable frame.

144. (New) The method of Claim 140, wherein the device at least partially prevents passage of embolic material from the left atrial appendage by supporting tissue growth.

145. (New) A method of performing a procedure at an atrial appendage of a patient, comprising:

positioning an implantable structure adjacent the opening of the atrial appendage, the structure having a reduced configuration and an enlarged configuration, wherein the structure is in a reduced configuration while being positioned, and wherein the structure conforms to an inner wall tissue surface when enlarged.

146. (New) The method of Claim 145, further comprising enlarging the structure to its enlarged configuration at the atrial appendage.

147. (New) The method of Claim 146, further comprising enlarging the structure to its enlarged configuration at least partially within the atrial appendage.

148. (New) The method of Claim 145, further comprising altering a position of the structure within the atrial appendage while the structure is being positioned.

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149. (New) The method of Claim 148, wherein altering the position comprises releasing the implantable structure from a delivery device to initially position the structure at the atrial appendage.

150. (New) The method of Claim 145, wherein positioning the implantable structure at the atrial appendage comprises an initial positioning of the structure at the atrial appendage.

151. (New) The method of Claim 145, wherein the implantable structure when positioned prevents the passage of embolic material from the atrial appendage.

152. (New) The method of Claim 145, wherein the implantable structure comprises a surface that induces tissue growth.

153. (New) A method of performing a procedure at an atrial appendage of a patient, comprising:

providing an implantable structure positioned adjacent the opening of the atrial appendage, the structure having a reduced configuration and an enlarged configuration, the enlarged configuration blocking the opening of the atrial appendage; and

changing the configuration of the structure at the atrial appendage.

154. (New) The method of Claim 153, wherein changing the configuration of the structure comprises enlarging the structure.

155. (New) The method of Claim 154, wherein the structure when enlarged prevents passage of embolic material from the atrial appendage.

156. (New) The method of Claim 153, wherein the structure changes its configuration at least partially within the atrial appendage.

157. (New) The method of Claim 153, wherein the implantable structure comprises a surface that induces tissue growth.

158. (New) A method of performing a procedure at an atrial appendage of a patient, comprising:

deploying an implantable structure at the atrial appendage with a delivery device positioned at the atrial appendage, the structure being configured to block an opening of the atrial appendage; and

removing the delivery device from its position at the atrial appendage.

159. (New) The method of Claim 158, wherein the delivery device is a catheter.

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160. (New) The method of Claim 158, wherein the delivery device is delivered percutaneously.

161. (New) The method of Claim 158, further comprising changing a position of an implantable structure at the atrial appendage, the structure having a reduced configuration and an enlarged configuration.

162. (New) The method of Claim 161, further comprising changing the configuration of the structure at the atrial appendage.

163. (New) The method of Claim 162, wherein the configuration is changed from the reduced configuration to the enlarged configuration.

164. (New) The method of Claim 158, wherein the delivery device is removed after deploying the implantable structure at the atrial appendage.

165. (New) The method of Claim 158, wherein the delivery device is removed without the implantable structure.

166. (New) The method of Claim 158, wherein the delivery device is removed after positioning the implantable structure at the atrial appendage.

167. (New) The method of Claim 158, wherein the delivery device is removed after an initial positioning of the implantable structure at the atrial appendage.

168. (New) The method of Claim 158, further comprising removing the delivery device from the patient.

169. (New) The method of Claim 158, wherein the delivery device is positioned within the atrial appendage.

170. (New) A method of preventing passage of embolic material from an atrial appendage, the method comprising:

delivering a device to the atrial appendage; and

positioning the device at the atrial appendage, the device when positioned having at least a portion that generally conforms to an inside surface of the atrial appendage.

171. (New) The method of Claim 170, wherein positioning the device comprises expanding the device into contact with an inside surface of the atrial appendage.

172. (New) The method of Claim 170, wherein the device comprises a frame with an outer rim that generally conforms to an inside surface of the atrial appendage.

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173. (New) The method of Claim 170, wherein the device when positioned comprises a frame that generally conforms to an inside surface of the atrial appendage.

174. (New) The method of Claim 173, wherein the frame comprises a plurality of linked elements.

175. (New) The method of Claim 173, wherein the frame is generally cylindrical.

176. (New) The method of Claim 170, wherein positioning the device comprises positioning a barrier across the atrial appendage.

177. (New) The method of Claim 170, wherein the device is delivered through the normal opening of the atrial appendage.

178. (New) The method of Claim 170, wherein embolic material is prevented from passage from the atrial appendage substantially entirely by positioning of the device at the atrial appendage.

179. (New) The method of Claim 1, wherein said device seals off the left atrial appendage when expanded.

180. (New) The method of Claim 85, wherein the implantable structure seals off the atrial appendage when enlarged.